

~~SECRET~~

Nº

81

RESEARCH AID

CONSTRUCTION OF AN INDEX
OF THE SOVIET GROSS NATIONAL PRODUCT



CIA/RR RA-59-5

April 1959

CENTRAL INTELLIGENCE AGENCY

OFFICE OF RESEARCH AND REPORTS

~~SECRET~~

6-208755/1

W A R N I N G

This material contains information affecting the National Defense of the United States within the meaning of the espionage laws, Title 18, USC, Secs. 793 and 794, the transmission or revelation of which in any manner to an unauthorized person is prohibited by law.

~~SECRET~~

RESEARCH AID

CONSTRUCTION OF AN INDEX OF THE SOVIET GROSS NATIONAL PRODUCT

CIA/RR RA-59-5

CENTRAL INTELLIGENCE AGENCY

Office of Research and Reports

~~SECRET~~

~~SECRET~~

This research aid was prepared by

25X1A9a



~~SECRET~~

~~SECRET~~

FOREWORD

An integral part of the annual contribution to the national intelligence estimate on the USSR is a projection of the rate of growth of the Soviet economy for the period in question. Such a projection provides a picture in aggregate terms of future Soviet economic capabilities. This research aid describes the construction of an index of the Soviet gross national product by which the estimate of the growth of the Soviet economy may be projected and also presents the growth projections.

~~SECRET~~

S-E-C-R-E-T

CONTENTS

	<u>Page</u>
Summary	1
I. Introduction	1
II. Weighted Indexes of Sector of Origin	2
A. Indexes of Gross National Product by Sector of Origin	7
1. Industry	7
2. Agriculture	8
3. Construction	8
4. Transportation	8
5. Communications	9
6. Trade	9
7. Services	9
a. Health and Education	9
b. Military Services	9
c. Administration	9
d. Housing	10
e. Other	10
B. Basis of Weighting	10
1. National Income	10
2. Amortization Allowances	11
3. Uncompensated Factor Costs	11
4. 1955 Weights by Sector of Origin	13
III. Weighted Indexes of End Use	13
A. Indexes of Gross National Product by End Use	15
1. Consumption	15
a. Food Consumption	15
b. Nonfood Consumption	15
c. Services	15
2. Investment	16
3. Defense	16
4. Administration	16

- v -

S-E-C-R-E-T

S-E-C-R-E-T

	<u>Page</u>
B. Basis of Weighting	16

Appendix

Source References	19
-----------------------------	----

Tables

1. Indexes of Soviet Adjusted Value Added, by Sector of Origin, 1947-58, 1963, and 1965	3
2. Average Annual Rates of Growth of Soviet Adjusted Value Added, by Sector of Origin, Selected Periods, 1951-65 . .	4
3. Soviet Adjusted Value Added and Gross National Product, 1947-58, 1963, and 1965	5
4. Indexes of Soviet Adjusted Value Added, by End Use, 1950-58, 1963, and 1965	6
5. Average Annual Rates of Growth of Soviet Adjusted Value Added, by End Use, Selected Periods, 1951-65	7
6. Distribution of Explicit Soviet Amortization Allowances, by Sector of Origin, 1955	12
7. Adjusted Soviet Value-Added Weights, by Sector of Origin, 1955	14

S-E-C-R-E-T

S-E-C-R-E-T

CONSTRUCTION OF AN INDEX OF THE SOVIET GROSS NATIONAL PRODUCT*

Summary

Soviet gross national product (GNP) is projected to increase from 45 to 55 percent from the base year 1958 to 1965, an average annual rate of increase of 5.4 to 6.5 percent. This rate may be compared with an increase of 55 percent estimated to have taken place from the base year 1950 to 1957, an average annual rate of increase of 6.5 percent. These estimates represent an aggregation of indexes of the performance of those sectors in which GNP originates (the sectors of origin). It is considered that these indexes would permit a more reliable estimate of future Soviet growth than indexes of end use because they are based to a far greater extent on official physical production data.

The estimates of performance are aggregate indexes of actual and projected time series of physical output or services within the various sectors in which GNP originates, weighted by 1955 prices. These sector indexes were combined into an aggregate index, by use of value-added weights for each sector, to derive an index describing the trend of total GNP. The projections were not carried out on a year-by-year basis but were made to indicate as nearly as possible the future trend of Soviet GNP based on available Soviet data. The index is necessarily tentative because of both data and conceptual difficulties. Questions of reliability and pertinence of output and price data are inherent in all the production indexes. Additional qualifications are introduced by assuming that the output trend (gross with the exception of agriculture and services) is representative of the trend of value added in each sector, and, further, that the trend of GNP follows closely that of value added. It is felt that the resultant index provides the best measurement of Soviet GNP possible at the present time, but its tentative nature and its lack of precision should be recognized.

I. Introduction.

The procedure described below is intended to be a description of the method followed to construct indexes of gross national product for inclusion in the contribution to the national intelligence estimate on the USSR. The methodology has not been subjected to critical analysis,

* The estimates and conclusions in this research aid represent the best judgment of this Office as of 15 March 1959.

S-E-C-R-E-T

S-E-C-R-E-T

nor has it previously been employed elsewhere in this exact form in official and private estimates of GNP trends of other economies. A near approximation has been attempted in the UK. An official UK study ¹/_{*} concludes that a weighted index of value added by sectors of origin closely approximates for short periods an index derived by deflation of GNP valued by final product in current terms. The methodology in this research aid is based on the additional assumption that the trend in gross output accurately reflects that of value added in most of the sectors. Future research will seek to evaluate critically the efficacy of these component sector of origin indexes and will also compare Soviet and US indexes derived by the method used herein with indexes obtained by deflating current value end-use components of GNP.

Soviet GNP has been projected on the basis of a weighted aggregate of sector of origin indexes (see Tables 1, 2, and 3**). These indexes in turn represent weighted aggregations of projected physical output or services time series. At the same time, parallel projections based on end-use indexes were made (see Tables 4 and 5***). These were believed to reflect Soviet economic growth less accurately, because they are based not on physical data but on official value indexes or less direct intelligence estimates. For purposes of international comparison, however, measures of end-use distribution of product are necessary. The over-all rates of growth projected by the two methods of estimation are quite similar.

II. Weighted Indexes of Sector of Origin.

The measurement and projection of the growth of Soviet GNP from the origin side of the accounts proceeded from the construction of indexes of output for the various sectors in which GNP originates. These indexes were then combined, using value-added weights, to obtain the single over-all measure of GNP change. This procedure is based on the assumption that the trend of the value added of any given sector will follow closely the trend of the gross production of that sector. Exceptions to this assumption and procedure occur in the cases of services and agriculture. It was assumed that in the case of services the input trend would be representative of the trend in output.****

* For serially numbered source references, see the Appendix.

** Tables 1, 2, and 3 follow on pp. 3, 4, and 5, respectively, below. All figures in this research aid are in 1955 rubles. Neither the official Soviet exchange rate of 4 rubles per US \$1 for merchandise transactions nor the official Soviet exchange rate of 10 rubles per US \$1 for tourist and other "invisible" transactions is appropriate for converting national accounts entries from rubles to dollars.

*** Tables 4 and 5 follow on pp. 6 and 7, respectively, below.

**** Text continued on p. 7.

S-E-C-R-E-T

Table 1
Indexes of Soviet Adjusted Value Added, by Sector of Origin a/
1947-58, 1963, and 1965

Sector	1947	1948	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958	1963	1965
Total value added	54	61	68	74	76	83	84	91	100	111	115	123	161 to 168	178 to 191
Industry	30	40	49	60	68	73	79	89	100	109	118	130	191 to 209	223 to 253
Agriculture	71	79	83	87	80	88	84	89	100	116	112	119	129 to 134	132 to 141
Construction	35	42	51	58	68	77	80	94	100	113	128	141	208	229
Transportation	32	40	48	56	64	71	78	88	100	113	127	138	215	247
Communications	57	60	63	68	73	79	84	92	100	106	112	121	192	236
Trade	49	53	56	62	68	74	83	92	100	108	117	126	172	191
Services	76	79	85	88	93	97	98	99	100	101	105	109	135	149
Health	63	68	74	78	83	87	92	96	100	104	109	113	134	144
Education	68	74	77	80	83	88	92	96	100	103	109	113	143	156
Military services	77	79	91	96	104	107	105	104	100	95	94	95	100	102
Administration	166	159	155	147	149	149	132	112	100	98	97	99	107	111
Housing	82	84	87	88	90	93	95	97	100	103	107	112	151	168
Other														
Personal transportation	38	43	49	54	61	69	75	86	100	108	122	141	239	296
Household operation	51	53	57	63	69	76	82	90	100	110	123	135	213	262
Recreation and culture	55	57	59	64	69	73	80	87	100	105	111	117	149	166
Repair services	54	57	63	68	73	79	86	93	100	107	116	125	186	216
Personal care	76	80	80	84	88	92	96	100	100	104	108	112	132	140

a. Calculated on the basis of 1955 rubles.

Table 2

Average Annual Rates of Growth
of Soviet Adjusted Value Added, by Sector of Origin
Selected Periods, 1951-65

Sector	1951-55 a/	1951-57 a/	1959-65 b/	Percent
Total GNP	6.2	6.5	5.4 to 6.5	
Industry	10.8	10.1	8.0 to 10.0	
Agriculture	2.8	3.7	1.5 to 2.5	
Construction	11.5	12.0	7.2	
Transportation	12.3	12.4	8.7	
Communications	8.0	7.4	10.0	
Trade	10.0	9.5	6.1	
Services	2.6	2.6	4.5	
Health	5.1	4.9	3.5	
Education	4.6	4.5	4.7	
Military services	0.8	-0.3	1.0	
Administration	-7.4	-5.7	1.6	
Housing	2.6	2.8	6.0	
Other				
Personal transportation	13.1	12.3	11.2	
Household operation	9.7	10.0	9.9	
Recreation and culture	9.3	8.2	5.1	
Repair services	8.0	7.9	8.1	
Personal care	3.5	3.7	3.2	

a. Base year 1950.

b. Base year 1958.

SECRET

Table 3

Soviet Adjusted Value Added and Gross National Product
1947-58, 1963, and 1965

		Billion 1955 Rubles
Year	Adjusted Value Added	Gross National Product (Established Prices)
1947	590	711
1948	667	803
1949	743	896
1950	809	975
1951	831	1,001
1952	907	1,093
1953	918	1,106
1954	995	1,198
1955	1,093	1,317
1956	1,213	1,462
1957	1,257	1,515
1958	1,344	1,620
1963	1,760 to 1,836	2,120 to 2,213
1965	1,946 to 2,088	2,344 to 2,515

Table 4

Indexes of Soviet Adjusted Value Added
by End Use a/
1950-58, 1963, and 1965

Sector	1950	1951	1952	1953	1954	1955	1956	1957	1958	1963	1965
	70	76	81	86	94	100	108	114	120 to 121	158 to 170	177 to 194
Total value added	70	76	81	86	94	100	108	114	120 to 121	158 to 170	177 to 194
Consumption	71	76	80	88	95	100	106	113	118 to 119	147 to 156	161 to 174
Investment	56	64	71	75	88	100	116	131	141 to 144	206 to 231	240 to 279
Defense	75	86	90	90	94	100	102	95	97	140	160
Administration	131	139	143	130	112	100	100	101	103	112	115

a. Calculated on the basis of 1955 rubles.

~~SECRET~~

Table 5

Average Annual Rates of Growth
of Soviet Adjusted Value Added, by End Use
Selected Periods, 1951-65

Sector	Percent		
	1951-55 <u>a/</u>	1951-57 <u>a/</u>	1959-65 <u>b/</u>
Total value added	7.4	7.2	5.6 to 7.1
Consumption	7.1	6.9	4.4 to 5.7
Investment	12.3	12.9	7.6 to 10.2
Defense	5.9	3.4	7.4
Administration	-5.3	-3.7	1.6

a. Base year 1950.

b. Base year 1958.

A net output index, discussed below, was constructed for agriculture, rather than the gross measure used for other commodity-producing sectors.

Appropriate indexes to project the entire GNP of the USSR were not available. In 1955 those sectors for which indexes were constructed represented 95 percent of total estimated GNP. The remainder, which includes the statistical discrepancy and sectors not covered by the individual indexes, was assumed to move as the total 95-percent sample.

A. Indexes of Gross National Product by Sector of Origin.

Construction of the sector indexes which were aggregated to derive the over-all GNP index is described below.

1. Industry.

An ideal index to serve as an indicator of the growth of a GNP sector of origin would measure directly the changes in value added within the sector. Because this information is not available, a modified gross value of industrial output index prepared for the years 1947-57 2/ was used. Such a procedure assumes that the trend of value added in industry does not vary greatly from the trend of gross output. Industrial production from the base year 1958 to 1965 was projected at an average annual rate of increase of 8 to 10 percent, which is consistent within the brackets of the Seven Year Plan (1959-65).

~~SECRET~~

~~SECRET~~

2. Agriculture.

The index of production employed for agriculture differs markedly from that used for industry. Agricultural output used in the production process (seed and feed) was netted from the gross production estimates to arrive at an estimate of net output. The net production estimates for the selected agricultural products (grain, potatoes, sugar beets, cotton, sunflower seeds, flax, and livestock products) were then aggregated into an index using weighted averages of the 1955 state purchase and collective farm market prices. This index was projected from 1958 to 1965 at an average annual rate of growth ranging from 2.1 to 3.0 percent.

Annual estimates of agricultural purchases from other sectors, also in 1955 prices, were deducted from the index to derive an agricultural index net of purchases from other sectors.* The purpose of this latter adjustment was to eliminate the impact of the more rapidly growing materials purchases from nonagricultural sectors -- that is, to make the index more comparable to an index of value added.

3. Construction.

The historical index of construction was based on Soviet data on construction-installation work through 1957. The projection was based on the projected gross output of six basic construction materials, weighted by 1955 prices and adjusted for a historical correlation between indexes of construction-installation work and the production of these materials. The adjustment was occasioned by the exclusion of such materials as steel and lumber, whose rates of growth have been and will continue to be lower than the six materials (cement, brick, precast reinforced concrete, asbestos cement shingles, window glass, and soft roofing) making up the sample. The resultant index is consistent with Soviet plans, which forecast a 64-percent increase above the level of 1958 in construction-assembly work in 1965. 3/

4. Transportation.

The index of transportation was based on actual and projected data for freight transport in ton-kilometers by type of carrier (rail, motor, pipeline, inland water, maritime, and air), valued at 1955 average revenues.

* An estimated expenditure by agriculture for materials in 1955 was moved for other years by an index of estimated expenditures on fertilizer and POL products. The fertilizer expenditure series was derived from actual and projected fertilizer production. The POL series was moved in relation to actual and estimated figures on tractor parks.

~~SECRET~~

S-E-C-R-E-T

5. Communications.

The index of communications was based on estimated revenue in 1 July 1955 rubles received by the Ministry of Communications for postal, telegraph, telephone, and broadcasting services. Projections were made on the basis of the estimated volume of services extrapolated by past rates of growth of these services.

6. Trade.

The index of trade for the years before 1955 was constructed by valuing Soviet figures for the number of workers in trade at the average 1955 wage and adding profits, which were also available from Soviet data. From 1955 forward, value added in trade was projected by the expected average annual increase in socialized trade included in the Sixth Five Year Plan (1956-60). The constant ratio between value added and retail sales assumes that increases or decreases in the cost of goods sold will be compensated by changes in turnover tax and will not affect the retail markup. Collective farm market wages were assumed to be constant for the entire period.

7. Services.

a. Health and Education.

Value added in health and education is assumed to be equal to wage inputs. Health and education wages, derived for the base year 1955 from Soviet statistical and accounting handbooks and Soviet plan announcements, were estimated for the other years from 1950 through 1960 on the basis of estimates of employment. ⁴/ Health wages were extrapolated beyond 1960 on the basis of the expected number of doctors in 1965; education wages, on the number of pupils and students estimated in grades 1 through 10 in 1965 and the probable ratio of students to teachers.

b. Military Services.

Military services constitute a combined index of military pay and military subsistence.

c. Administration.

Wages in government administration were estimated from Soviet budget data through 1957. The projection was made on the basis of expected population trend.

S-E-C-R-E-T

S-E-C-R-E-T

d. Housing.

The index of housing is based on estimates of state, private urban, and rural living space weighted by 1955 rents. The extrapolation is based on estimates of future housing availabilities.

e. Other.

Indexes of personal transportation, household operation, recreation and culture, repair services, and personal care represent total expenditures on these services. 5/ Personal transportation and household operation (utility) expenditures were extrapolated by an estimate of the output of these services. The index of recreation and culture was based on an estimated time series on admissions to places of entertainment and on government budget expenditure estimates; religious expenditures were assumed to remain at the 1955 level for the entire period. The index of repair services was interpolated between Soviet data on expenditures for repairs in 1950 and planned 1960 and extrapolated to 1965 at the same annual rate. The index of personal care was based on expenditures for hairdressing, public baths, and laundries estimated for the base year 1955. It was moved for the other years during 1950 through 1960 by population (hairdressing) and by Soviet statistical handbook data on public bath admissions and kilograms of laundry in the RSFSR and was extended to 1965 at the average annual rate from 1950 to 1960.

B. Basis of Weighting.

The individual indexes of sectors of origin were combined on the basis of estimates of the value added for the individual sectors. This measure of value added was derived by adding amortization allowances, and, in the case of agriculture, an estimate of uncompensated factor costs for agricultural land rent, to national income originating in the sectors. These adjustments are explained below.

1. National Income.

National income originating in the individual sectors is shown in a report on Soviet national accounts in 1955. 6/ Revisions have been made in the estimates for industry, agriculture, transportation, and services for that year in order to conform to improved data or to make the methodology comparable with that of a report on Soviet national accounts in 1950. 7/ The national income figures were derived largely from Soviet data on costs and profits. They include wages and other cash household income, income-in-kind, social insurance, and profits.

S-E-C-R-E-T

S-E-C-R-E-T

The sector estimates of national income originating in 1955 are as follows:

<u>Sector</u>	<u>Billion 1955 Rubles</u>
Industry	303.5
Construction	50.8
Agriculture	306.4
Transportation	41.1
Communications	5.7
Trade	41.5
Services	172.9
Statistical discrepancy and other	54.5
Total	<u>976.4</u>

It should be mentioned here that the imputed turnover tax included in farm household income-in-kind is included in the estimate of income originating in agriculture. This was done on the assumption that the wage payments implicit in the in-kind evaluation would have had to be sufficient to enable those goods consumed in kind to be purchased in the market at a price including turnover tax.

2. Amortization Allowances.

To the above estimates of national income originating in the individual sectors were added estimates of amortization allowances as shown in Table 6.*

Because the Machine Tractor Stations (MTS's) did not amortize their equipment and other capital stock, it was necessary to add to the estimated amortization allowance for agriculture shown below an imputed amortization for the MTS's. This imputed amortization allowance totaled 4.1 billion rubles and was derived in the following manner. Fixed assets of MTS's totaled, at the end of 1955, about 55.4 billion rubles. 8/ To this sum was applied the sovkhos amortization rate in 1955 of 7.5 percent of fixed assets. 9/ Because the MTS's do not amortize, the sovkhos rate of amortization was assumed to be appropriate.

3. Uncompensated Factor Costs.

To facilitate the comparison of Soviet GNP with that of the US and to obtain a comparable measure of Soviet economic growth, it has

* Table 6 follows on p. 12.

S-E-C-R-E-T

S-E-C-R-E-T

Table 6

Distribution of Explicit Soviet Amortization Allowances
by Sector of Origin
1955

Sector	Billion 1955 Rubles
Total allowances	54.5 <u>a/</u>
Industry	27.2 <u>b/</u>
Construction	2.1 <u>c/</u>
Agriculture	2.6 <u>d/</u>
Transportation	17.7 <u>e/</u>
Communications	1.0 <u>f/</u>
Trade	1.0 <u>g/</u>
Services	2.9 <u>h/</u>

a. 10/b. 11/

c. Amortization charges equal 2 percent of sebestoimost' in construction. 12/ Total sebestoimost' in construction in 1955 is estimated to be 104.9 billion rubles. 13/ Amortization in construction thus equals 2 percent of 104.9, or 2.1 billion rubles.

d. Only state farms charge amortization allowances as an expense against revenue. These amortization charges are estimated to be 2.6 billion rubles. 14/ For an additional allowance to agriculture for estimated MTS amortization, which is not explicit, see 2, p. 11, above.

e. On the basis of information in source 15/, explicit amortization charges in transportation are estimated to be as follows: rail, 7.4 billion rubles; water, 0.3 billion rubles; and truck, 10.0 billion rubles.

f. Total costs in communications are calculated to be 7.4 billion rubles. 16/ It is arbitrarily assumed that amortization costs made up approximately 10 percent of total costs and thus amounted to about 1 billion rubles.

g. Explicit amortization charges for trading organizations are relatively small because most facilities are rented. Some amortization charges, however, are included in the category "Expenditures for Maintenance of Physical Location and Fixtures." 17/ In 1955 this category equaled 3.7 billion rubles for the Ministry of Trade, the Main Administration of Workers' Supply, the Central Union of Consumer Cooperatives, and Public Dining. 18/ Because this category includes many other expenses -- such as rent, certain repairs, and purchase and maintenance of fixtures (scales, counters, and the like) -- it is assumed that, at the most, 1 billion rubles were devoted to amortization allowances.

h. Residual.

- 12 -

S-E-C-R-E-T

S-E-C-R-E-T

been necessary to add to the Soviet GNP an estimate of the amount for factors of production in the USSR which are actually not compensated, chiefly agricultural land rent. This discrepancy arises out of the institutional differences of the two economies. The estimate for the uncompensated factors was calculated on the assumption that the farmers' share of the consumers' expenditure (gross value of farm output as a percent of retail value of agricultural products) would have been the same in the USSR as the average for US farmers during the postwar period. It was estimated that Soviet farmers received 25 percent of retail value while the US farmers' share was 47 percent.* Soviet procurements from farmers of 83 billion rubles in 1955, therefore, would have been valued at about 156 billion rubles in an institutional arrangement such as that in the US. The difference between what the Soviet farmers actually received and what they would have received in a different institutional framework, 73 billion rubles, is termed the uncompensated factor costs. A portion of this amount, however, was reflected in the form of subsidies paid to the MTS's and the sovkhozes, totaling 15 billion rubles. 20/ These subsidies were therefore deducted from the uncompensated factor costs to arrive at a net figure of 58 billion rubles, which was then added to the agriculture weight to arrive at an adjusted estimate of value added.

4. 1955 Weights by Sector of Origin.

The adjusted value-added weights by sector of origin are shown in Table 7.**

III. Weighted Indexes of End Use.

Indexes of the end uses of GNP were combined into a weighted aggregate index (see Table 4***).

* The calculation of the ratio of Soviet to US farm receipts as a proportion of retail sales is crude and is based on only three products. It is possible to get total retail sales of agricultural products in the USSR, 19/ which could be matched against procurement by commodities. Considerable effort would be required, however, to obtain US farm receipts as a proportion of retail sales of individual farm products. Such figures are available with US weights, but for this purpose Soviet weights should be used. It would be necessary to obtain the US farmers' share of retail prices for all the individual commodities and to use Soviet weights for their combination. Because the gain in accuracy would probably be small, and in view of the tenuousness of the basic assumption, this lengthy procedure seemed unwarranted at this time.

** Table 7 follows on p. 14.

*** P. 6, above.

S-E-C-R-E-T

S-E-C-R-E-T

Table 7

Adjusted Soviet Value-Added Weights, by Sector of Origin
1955

Billion 1955 Rubles	
Sector	Weights
Total value-added weights	<u>1,093.0</u> a/
Industry	330.7
Agriculture	<u>371.1</u>
Construction	<u>52.9</u>
Transportation	<u>58.8</u>
Communications	<u>6.7</u>
Trade	<u>42.5</u>
Services	<u>175.8</u>
Health	19.0 b/
Education	42.0 b/
Military services	57.1 c/
Administration	15.2 d/
Housing	9.1 e/
Other	<u>33.4</u>
Personal transportation	11.1
Household operation	7.2
Recreation and culture	9.6
Repair services	3.8
Personal care	1.7
Statistical discrepancy and other	<u>54.5</u>

a. Total GNP, shown in Table 3, p. 5, above, is derived by adding to this adjusted value added that part of the turnover tax which was assumed not to represent factor costs and other enterprise taxes of an indirect nature, and deducting subsidies.

b. Value added in health and education is defined as the total wage bill, including social insurance. 21/

c. Value added in military services is the sum of military pay and military subsistence. Pensions and reserve payments by enterprises are excluded because they are included elsewhere.

d. Value added in administration is the sum of wages in government general administration, internal security, and the general agricultural program plus social insurance in 1955. 22/

e. Two-thirds of the total expenditures on housing, including an adjustment for imputed rent, personal transportation, household operation including utilities, recreation and culture, repair services, and personal care, 23/ were assumed to represent value added.

S-E-C-R-E-T

S-E-C-R-E-T

A. Indexes of Gross National Product by End Use.

1. Consumption.

The index of consumption has three component parts -- food, nonfood, and services -- which were combined with 1955 weights. Each component in turn is a weighted aggregate of physical time series. The weights used in aggregating the three indexes are essentially the household expenditures on these items in the 1955 national accounts, ^{24/} with revisions in the evaluation of farm income-in-kind and in the value of services. The extrapolation of this combined index to 1965 ranges between 4.6 and 5.5 percent per year, reflecting the movement of the range assumed for the projection of agricultural net output.*

a. Food Consumption.

The index of food is computed from estimates of human consumption of 13 individual food products ranging from flour to wine and beer. Human consumption was derived as output plus net imports and reductions in reserves less seed, feed, waste, and nonfood use where important. Minimization of double-counting of some foods which are acquired by households in forms representing various stages of processing (for example, bread grains are purchased as flour, bread, and confections) was attempted by including in the index the principal foods (flour, meat, milk, and sugar) in their basic forms and limiting the "processed foods" category to a small number of foods which involve a relatively minor amount of duplication. The items in the sample were weighted by an average of 1955 state and cooperative retail prices, collective farm market prices, and prices used to value producer consumption.

b. Nonfood Consumption.

The index of the nonfood sector is the official Soviet index of the physical volume of state and cooperative retail sales of nonfood goods. It was projected on the basis of expected output of a sample of nonfood consumer goods, using retail sales of these goods as weights.

c. Services.

The index of services comprises a consolidation of individual consumer services indexes which have been briefly described above** and for which more detailed descriptions are available elsewhere. ^{25/}

* See II, A, 2, p. 8, above.

** See II, A, 7, p. 9, above.

S-E-C-R-E-T

S-E-C-R-E-T

2. Investment.

The index of investment is based on Soviet data on investment through 1957 and an estimated annual rate of growth of 8 to 10 percent from the base year 1958 to 1965. Soviet data on the volume of centralized and local investment, including that of the kolkhozes, are available in 1 July 1955 rubles for 1947-56. ^{26/} An alternative series was published subsequent to this series, with revised Soviet unit valuations. ^{27/} The new valuation should have little effect on the trend of the earlier series because the new unit valuations are about 4 percent above the level of the 1 July 1955 rubles for the entire period. Not included in the investment series are capital repairs, private housing, working capital, the costs of project research and geological prospecting work, and the cost of forming livestock herds. These were assumed to grow at the same rate as centralized and local investment, or at least not to diverge significantly enough to affect the trend.

3. Defense.

The index of defense is derived from estimated military expenditures during the period. Military pensions and payments to reserve members by economic enterprises were excluded to avoid double counting.

4. Administration.

The index of administration through 1957 was derived from budget expenditures on labor and materials for general administration and from estimated outlays for internal security, deflated by appropriate price indexes. The index was projected beyond 1957 on the basis of the anticipated trend in the growth of population, in the absence of any other pertinent data.

B. Basis of Weighting.

The procedure employed to combine the indexes of end use did not differ from the over-all procedure used to aggregate the indexes of the sectors of origin. In both instances the goal was to weight the individual indexes by an estimate of adjusted value added (including subsidies). Thus, to weight the individual indexes of end use, that part of the turnover tax which was assumed not to represent factor cost, and other enterprise taxes of an indirect nature, were deducted from the estimate of 1955 GNP at market prices, and subsidies were added to

S-E-C-R-E-T

S-E-C-R-E-T

derive an estimate of adjusted value added.* The resulting total is identical with that derived for the sectors of origin and was distributed among the end uses in the following manner:

<u>Sector</u>	<u>Billion 1955 Rubles</u>	<u>Percent</u>
Consumption	684.7	62.6
Investment	242.1	22.2
Defense	138.6	12.7
Administration	27.6	2.5
Total	<u>1,093.0</u>	<u>100.0</u>

* The end-use allocation is based on the report on national accounts in 1955, 28/ with certain revisions to conform to improved data or to methodology comparable with the 1950 national accounts methodology. 29/ As explained above, the imputed turnover tax included in agricultural income-in-kind was considered to be a factor cost. In addition, in 1955 the 58.0 billion rubles computed above (see II, B, 3, p. 11, above) as uncompensated factor costs for agriculture (chiefly land rent, which comprises the portion of turnover tax assumed to be factor cost) and the 4.1 billion rubles for estimated MTS amortization were included. This amount (62.1 billion rubles) was distributed by end use in the same proportions as estimated expenditures on agricultural products, as follows: consumption, 92.8 percent; investment, 0.5 percent; and defense, 6.7 percent. 30/

S-E-C-R-E-T

S-E-C-R-E-T

APPENDIX

SOURCE REFERENCES

The indexes of sector of origin and end use which are basic to this research aid were computed by the various appropriate branches of this Office and were taken almost entirely from their unpublished contributions to CIA/RR 132, The Soviet Economy in 1956-57 and Plans for 1958-62, 2 May 1958, CONFIDENTIAL, and to Project 14.2341, Evaluation of the Seven Year Plan (unpublished).

Evaluation, following the classification entry and designated "Eval.," have the following significance:

<u>Source of Information</u>	<u>Information</u>
Doc. - Documentary	1 - Confirmed by other sources
A - Completely reliable	2 - Probably true
B - Usually reliable	3 - Possibly true
C - Fairly reliable	4 - Doubtful
D - Not usually reliable	5 - Probably false
E - Not reliable	6 - Cannot be judged
F - Cannot be judged	

"Documentary" refers to original documents of foreign governments and organizations; copies or translations of such documents by a staff officer; or information extracted from such documents by a staff officer, all of which may carry the field evaluation "Documentary."

Evaluations not otherwise designated are those appearing on the cited document; those designated "RR" are by the author of this research aid. No "RR" evaluation is given when the author agrees with the evaluation on the cited document.

Except for finished CIA intelligence, all sources in this research aid are evaluated RR 2.

S-E-C-R-E-T

S-E-C-R-E-T

1. Gt Brit, Central Statistical Office. National Income Statistics, Sources and Methods, London, 1956, p. 38-44. U.
2. CIA. Project 10.2029, Index of Soviet Industrial Production (unpublished). S.
3. Stroitel'naya gazeta, 26 Nov 58. U.
4. CIA. CIA/RR 150, Outlays on Consumer Services in the USSR, 1948-60, Nov 58. U.
5. Ibid.
6. CIA. CIA/RR 133, Soviet National Accounts for 1955, 28 May 58, p. 94. S.
7. CIA. CIA/RA 59-2, Soviet National Accounts for 1950, Feb 59. S.
8. Pavlov, P. Snashivaniye i amortizatsiya osnovnykh fondov (Consumption and Amortization of Fixed Assets), Moscow, 1957, p. 40. U.
9. Basyuk, T.L. Organizatsiya sotsialisticheskogo sel'skokhozyaystvennogo proizvodstva (The Organization of Socialist Agricultural Production), Moscow, 1956, p. 409. U.
10. CIA. CIA/RR 133 (6, above), p. 77. S.
11. CIA. Project 14.1898, Cost of Production and Value of Output in Selected Economic Sectors, USSR (unpublished). C.
12. Shass, M. Ye. Snizheniye sebestoimosti stroitel'nykh rabot (Lowering Sebestoimost' in Construction Work), Moscow, 1956, p. 42-43. U.
13. CIA. Project 14.1898 (11, above).
14. CIA. CIA/RR 133 (6, above), p. 41. S.
15. CIA. Project 14.1898 (11, above).
16. CIA. CIA/RR 133 (6, above), p. 99. S.
17. Gatovskiy, L.M. (edr). Izderzhki obrashcheniya v SSSR i puti ikh snizheniya (Expenditures of Circulation and Ways of Lowering Them), Moscow, 1955, p. 45-46, 90. U.
18. USSR. Sovetskaya trgovlya (Soviet Trade), Moscow, 1956, p. 122-123. U.
19. Ibid., p. 40-43. U.
20. CIA. CIA/RR 133 (6, above), p. 39, 46. S.
21. CIA. CIA/RR 150 (4, above).
22. CIA. CIA/RR 133 (6, above), p. 58. S.
23. CIA. CIA/RR 150 (4, above).
24. CIA. CIA/RR 133 (6, above), p. 84. S.
25. CIA. CIA/RR 150 (4, above).
26. USSR. Narodnoye khozyaystvo SSSR v 1956 godu (National Economy of the USSR in 1956), 1957, p. 173. U.
27. USSR. Dostizheniya Sovetskoy vlasti za 40 let (Achievements of Soviet Power in 40 Years in Figures), 1957, p. 207. U.
28. CIA. CIA/RR 133 (6, above), p. 88-89. S.
29. CIA. CIA/RA 59-2 (7, above).
30. CIA. CIA/RR 133 (6, above), p. 90. S.

S-E-C-R-E-T

~~SECRET~~

~~SECRET~~